

Abstract Submitted  
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**Z-Pinch Implosion Dynamics Studies by Using Laser Induced Fluorescence and Shearing Interferometer**<sup>1</sup> NIANSHENG QI, Titan Pulse Sciences Division, San Leandro, CA 94577, BRUCE FAILOR, JEFF BANISTER, JERRY LEVINE, HENRY SZE, Titan Pulse Sciences Division, San Leandro, CA 94577, DAVID LOJEWSKI, Defense Threat Reduction Agency, 1680 Texas Ave SW, Kirtland AFB, NM 87117, TITAN PULSE SCIENCES DIVISION TEAM, DEFENSE THREAT REDUCTION AGENCY TEAM — The energy coupling and the x-ray output of z-pinches are determined by the implosion history. Measurements from the initial gas, the MHD implosion, to the pinch phase are needed. Many diagnostics have been developed for the pinch phase. We have developed a Planar Laser Induced Fluorescence (PLIF) technique to characterize the gas puff in the initial phase and demonstrated a Laser Shearing Interferometer (LSI) approach for the implosion and pinch phases on a high current accelerator. The instruments are user-friendly and give the data quickly. Using the PLIF, the gas density and flow velocity profiles were obtained with sub-mm spatial resolutions. From the LSI, the shape of the imploding plasma was determined and the wavelengths of the R-T instability were measured. Combination of the PLIF and (LSI) measurements will enable us to better understand the implosion dynamics.

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